Complete the following reactions. Circle the most favored products.

1. 
$$H_2/Ni$$

$$^{2.} \nearrow ^{\mathrm{NH_2}} \ ^{+} \ \mathrm{H_2O} \quad \Longleftrightarrow \quad$$

3. 
$$H_2/Ni$$
  $\Delta$ 

5. 
$$\downarrow 0$$
 +  $\rightarrow NH_2$   $[-H_2O]$ 

6. 
$$+$$
 NaOH  $\rightarrow$ 

7. 
$$^{NH_2}$$
 +  $_2O$   $\longleftrightarrow$ 

9. 
$$\bigcirc$$
CI + NH<sub>3</sub>  $\longrightarrow$ 

$$10.$$
 NH  $+$  CI  $\rightarrow$ 

11. 
$$+$$
 NaOH  $\rightarrow$ 

12. 
$$\uparrow$$
 + NH<sub>3</sub>  $\downarrow$  [-H<sub>2</sub>O]

13. 
$$\stackrel{\circ}{\underset{\text{NH}}{\longleftarrow}}$$
 + HCI + H<sub>2</sub>O  $\longrightarrow$ 

14. 
$$\downarrow$$
NH + HCI  $\rightarrow$ 

16. 
$$N \longrightarrow H_2/Ni \longrightarrow \Delta$$

17. 
$$NH_2$$
 + HCI  $\rightarrow$ 

18. 
$$\frac{H_2/Ni}{\Delta}$$

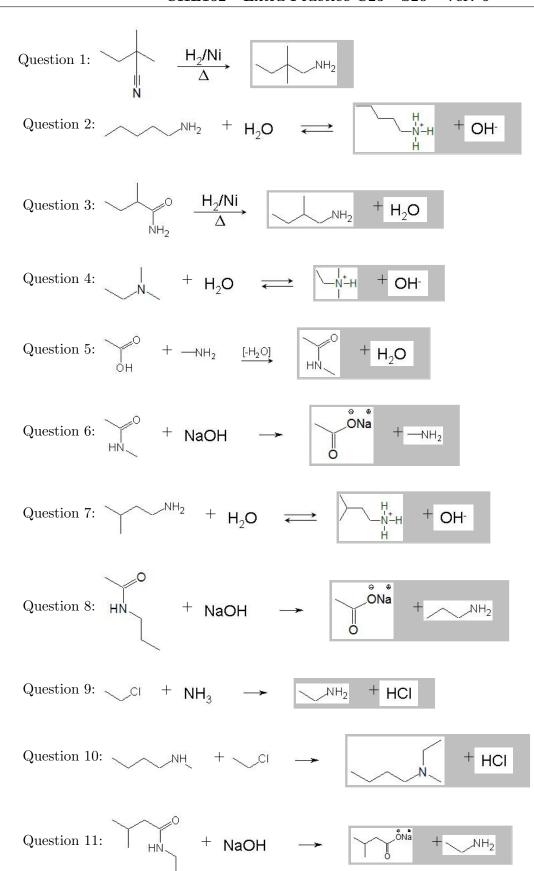
$$^{20.}$$
  $^{\rm NH}$   $^{+}$  HCl  $\longrightarrow$ 

21. 
$$HN \longrightarrow \frac{H_2/Ni}{\Delta}$$

22. 
$$\longrightarrow$$
 + HCI + H<sub>2</sub>O  $\longrightarrow$ 

23. HN + HCI + 
$$H_2O$$
  $\longrightarrow$ 

25. 
$$H_N$$
  $H_2/Ni$   $\Delta$ 



Question 13: 
$$\longrightarrow$$
 + HCl + H<sub>2</sub>O  $\longrightarrow$   $\longrightarrow$  OH +  $\stackrel{\text{H}}{\longrightarrow}$  + Cl  $\stackrel{\text{H}}{\longrightarrow}$ 

Question 14: 
$$\downarrow$$
 HCI  $\rightarrow$   $\downarrow$  HCI  $\rightarrow$   $\downarrow$  H

Question 15: 
$$+ -NH_2$$
  $\underline{[H_2O]}$   $+ H_2O$ 

Question 16: 
$$H_2/Ni$$
  $\Delta$   $NH_2$ 

Question 17: 
$$\longrightarrow$$
  $H_2$  + HCI  $\longrightarrow$   $H_1$   $H_2$   $H_3$   $H_4$   $H_4$   $H_4$   $H_4$   $H_4$ 

Question 18: 
$$H_2/Ni$$
  $\Delta$   $NH_2$ 

Question 20: 
$$\longrightarrow$$
  $+$  HCI  $\longrightarrow$   $\stackrel{\text{H}}{\longrightarrow}$   $\stackrel{\text{CI}}{\longrightarrow}$  CI

Question 21: 
$$HN \longrightarrow A$$
  $H_2/Ni$   $H_2O$ 

Question 22: 
$$\longrightarrow$$
 + HCl + H<sub>2</sub>O  $\longrightarrow$  OH +  $\stackrel{\text{H}}{\longrightarrow}$  + Cl

Question 24: 
$$H_2/Ni$$
  $\Delta$   $H_2O$ 

Question 25: 
$$H_2/Ni$$
  $H_2O$